East Stink Lake

Site Description

Location

Water designation number (WDN)	48-0040-00
Legal description	T124N-R54W-Sec.2; T124N-R55W-Sec.10,11,14,15 T126N-R54W-Sec. 35
County (ies)	Marshall
Location from nearest town	2.0 miles north of Eden, SD

Survey Dates and Sampling Information

Survey dates	September 19-20, 2013 (GN)
Gill net sets (n)	4

Morphometry (Figure 1)

Watershed area (acres)	29,465
Surface area (acres)	≈700
Maximum depth (ft)	unknown
Mean depth (ft)	unknown

Ownership and Public Access

East Stink Lake is a meandered lake owned by the State of South Dakota and the fishery is managed by the SDGFP. Public access to the lake is limited, as lands adjacent to the lake are privately owned.

Watershed and Land Use

The 29,465 acre Cattail/Kettle Lakes sub-watershed (HUC-12) encompasses East Stink Lake and is located within the larger Northern Coteau Lakes-Upper James River (HUC-10) watershed. Land use within the watershed is primarily agricultural with a mix of pasture or grassland, cropland, and woodland.

Water Level Observations

Water levels on East Stink Lake are not monitored by SDDENR.

Fish Management Information

Fish species	Black Bullhead, Walleye, White Sucker, Yellow Perch
Lake-specific regulations	none
Management classification	none
Fish consumption advisories	none

Figure 1. Map depicting geographic location of East Stink Lake from Eden, South Dakota.

Results and Discussion

East Stink Lake is a ≈700 acre natural lake located near Eden, South Dakota. In the spring of 2005, gill nets set in East Stink Lake revealed that few game fish inhabited the lake. Subsequently, the lake was utilized as a natural rearing pond for Walleye. Natural rearing ponds are stocked with Walleye fry in the spring, stocked fish grow throughout the summer months then a portion are harvested as large fingerlings in the fall. Harvested Walleye are stocked into area lakes to augment the population. If winterkill does not occur in the natural rearing pond, often a substantial year class remains and provides angling opportunities. Unfortunately, public access to East Stink Lake, which is a meandered lake, is difficult limiting angler use and fisheries management activities (e.g., stocking, fish community surveys). In 2013, gill nets were utilized to investigate the current status of the fishery and the results are reported in the following report.

Fish Species

Walleye: Four gill net nights resulted in the capture of 9 Walleye that ranged in TL from 22 to 51 cm (8.7 to 20.1 in; Figure 2). The mean gill net CPUE of stock-length Walleye was 1.8 (Table 1) and indicated low relative abundance.

Otoliths collected from gill net captured walleye suggested the presence of five year classes (2008-2012), with each being represented by only a few individuals (Table 2). No Walleye from the stocked 2005 cohort were sampled (Table 2; Table 4). It appears that limited natural recruitment has contributed to the population in recent years. However, the source (e.g., natural reproduction, stocking) of Walleye year classes in East Stink is difficult to determine as the lake has direct connections to West Stink Lake (during high water periods), where strong cohorts have been produced during both stocked and non-stocked years (Kaufman et al. 2012).

Few inferences can be made concerning size structure, growth, and/or condition due to the low sample size.

Yellow Perch: Yellow Perch were the most abundant fish species in the gill net catch. The mean gill net CPUE of stock-length Yellow Perch was 30.5 (Table 1). Currently, relative abundance is considered moderate to high.

Yellow Perch in the gill net catch ranged in TL from 9 to 33 cm (3.5 to 13.0 in) with the majority being less than quality-length (20 cm; 8 in; Figure 3). The PSD was 5 and the PSD-P was 1 (Table 1; Figure 3).

Otoliths collected from a sub-sample of gill net captured Yellow Perch suggested the presence of four year classes (2009 and 2011-2013) that comprised the entire sample (Table 5). The 2012 cohort was the most abundant and comprised 75% of Yellow Perch in the gill net catch (Table 5).

Males from the 2012 year class had a weighted mean TL at capture of 152 mm (6.0 in) at age 1; while their female counterparts had a weighted mean TL at capture of 160 mm (6.3 in; Table 6). Few Yellow Perch from older ages were captured (Table 6). Stock-quality length Yellow Perch dominated the gill net sample and had a mean Wr of 99.

Other: Black Bullhead and white sucker were other fish species captured in low numbers during the 2013 survey (Table 1).

Management Recommendations

1) Contact and participate with willing landowners to establish public access to East Stink Lake.

2) Conduct fish community assessment surveys periodically to monitor fish relative abundance, fish population size structures, and fish growth.

3) Collect otoliths from Walleye and Yellow Perch to assess age structure and growth rates of each population.

Table 1. Mean catch rate (CPUE; catch/net night) of stock-length fish, proportional size distribution of quality- (PSD) and preferred-length fish (PSD-P), and mean relative weight (Wr) of stock-length fish for various fish species captured in experimental gill nets from East Stink Lake, 2013. Confidence intervals include 80 percent (± CI-80) or 90 percent (± CI-90). BLB= Black Bullhead; WAE= Walleye; WHS= White Sucker; YEP= Yellow Perch

	Abundance		Stock Density Indices				Condition	
Species	CPUE	CI-80	PSD	CI-90	PSD-P	CI-90	Wr	CI-90
Gill Nets								
BLB	3.8	2.0	73	21	33	22	103	3
WAE	1.8	1.7	71	36	14	28	105	8
WHS	2.5	1.4	100	0	100	0	102	3
YEP	30.5	7.2	5	3	1	1	100	<1

Table 2. Year class distribution based on the expanded age/length summary for Walleye sampled in gill nets and associated stocking history (# stocked x 1,000) from East Stink Lake, 2013.

	Year Class								
Survey Year	2013	2012	2011	2010	2009	2008	2007	2006	2005
2013		3	1	2	2	1			
# stocked									
fry									2,500
sm. fingerling									
lg. fingerling									

Table 3. Weighted mean TL at capture (mm) for Walleye sampled in experimental gill nets (expanded sample size) from East Stink Lake, 2013.

	Age				
Year	1	2	3	4	5
2013	282 (3)	430 (1)	479 (2)	472 (2)	510 (1)

Table 4. Stocking history including size and number for fishes stocked into East Stink Lake, 2005-2013. WAE= Walleye

Year	Species	Size	Number
2005	WAE	fry	2,500,000

Table 5. Year class distribution based on the expanded age/length summary for Yellow Perch sampled in gill nets from East Stink Lake, 2013.

	Year Class				
Survey Year	2013	2012	2011	2010	2009
2013	33	117	5		1

Table 6. Weighted mean TL (mm) at capture by gender for Yellow Perch captured in experimental gill nets (expanded sample size) from East Stink Lake, 2013.

	Age				
Year	0	1	2	3	4
2012					
Male	99 (31)	152 (41)	186 (1)	---	---
Female	103 (2)	160 (77)	224 (4)	---	240 (1)
Combined	99 (33)	158 (117)	216 (5)	---	240 (1)

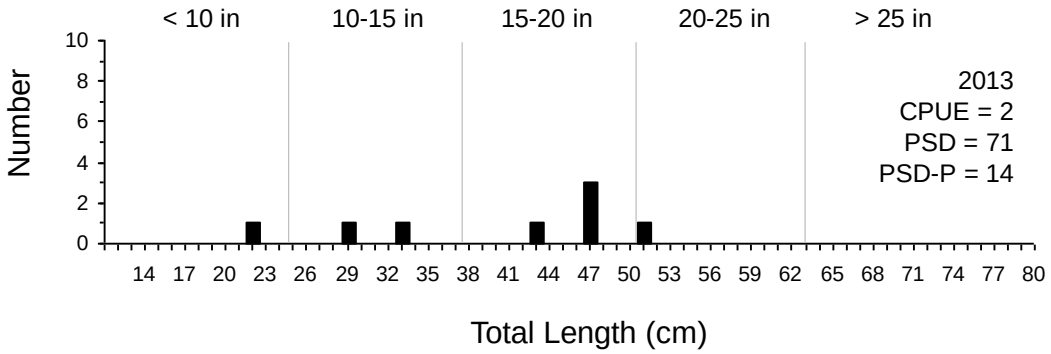
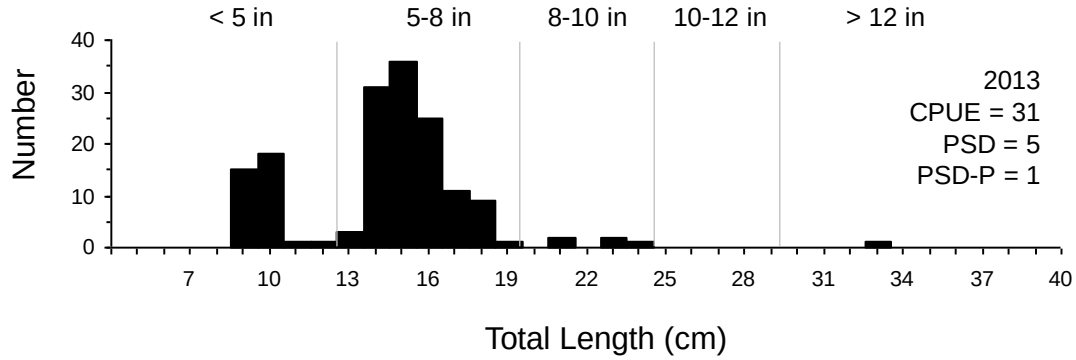


Figure 2. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Walleye captured using experimental gill nets in East Stink Lake, 2013.



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